

Notice of Allowability

Application No.

10/620,025

Examiner

Andy Huynh

Applicant(s)

KANG ET AL.

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Election dated 04/22/04.
2. ☒ The allowed claim(s) is/are 1-15.
3. ☒ The drawings filed on 14 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


David Nelms
Supervisory Patent Examiner
Technology Center 2800

DETAILED ACTION

Election/Restrictions

In the Response to Restriction Requirement dated April 22, 2004, Applicant has elected the Group I invention, claims **1-15** without traverse, drawn to a device is acknowledged. Accordingly, claims **16-27** are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 35 § 1.142(b) and MPEP § 821.03. Applicant has the right to file a divisional application covering the subject matter of the non-elected claims **16-27** of the Group II invention, drawn to a method.

Examiner's Amendment

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

This application is in condition for allowance except for the presence of claims **16-27** non-elected without traverse. Accordingly, claims **16-27** have been canceled.

In claim 8, lines 14 and 18, "tunnelling" is changed to -tunneling--.

Allowable Subject Matter

Claims 1-15 are allowed.

The following is an examiner's statement of reason for allowance: The prior art of record fails to teach or suggest the limitation recited a non-volatile memory device comprising: an impurity region formed between the source region and the drain region, wherein the impurity region is in a floating state; a vertical structure located between the source region and the impurity region on a first area of the semiconductor substrate such that a tunneling layer, a charge trapping layer, and a blocking layer are sequentially stacked between the source region and the impurity region; a control gate insulating layer located between the source region and the impurity region, the control gate insulating layer adjacent to the vertical structure as claimed in independent claim 1; and a non-volatile memory device comprising: a first impurity region and a second impurity region between the source region and the drain region, the first impurity region being in a floating state and adjacent to the source region and the second impurity region being in the floating state and adjacent to the drain region; a first vertical structure between the first impurity region and the second impurity region and adjacent to the first impurity region, the first vertical structure including a first tunneling layer, a first charge trapping layer, and a first blocking layer that are sequentially stacked; a second vertical structure between the first impurity region and the second impurity region and adjacent to the second impurity region, the first vertical structure including a second tunneling layer, a second charge trapping layer, and a second blocking layer that are sequentially stacked; a control gate insulating layer between the first vertical structure and the second vertical structure as claimed in independent claim 8.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy Huynh whose telephone number is (571) 272-1781. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



AH

05/14/04

David Nelms
Supervisory Patent Examiner
Technology Center 2800